

NOTES ON HIPPOBOSCIDÆ. 19. ADDITIONS TO THE  
LARGER SPECIES OF *LYNCHIA*, WITH DE-  
SCRIPTIONS OF TWO NEW SPECIES <sup>1</sup>

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Material of the larger species of *Lynchia* studied since the publication of my earlier paper in 1933 (*Psyche*, XL, pp. 68-82) has led me to modify some of my conclusions. *Lynchia wolcotti* Swenk appears to be a valid species and is here recognized as such. The African fly formerly referred to *L. palustris* was misidentified and is now described as a new species. An additional new species of this group is described from Ceylon.

The following emended key supersedes that published in 1933.

1. Mesonotum and disk of scutellum densely and fairly uniformly covered with soft, short hairs, directed backward; scutellum without median longitudinal groove. Frons very wide; inner margins of eyes distinctly converging below; postvertex very short and wide, about one-fourth to one-third the length of mediovertex; frontal bristles numerous, in several irregular rows. Palpi short, at most as long as fronto-clypeus. Wing membrane bare over much of the basal two-thirds (more extensively in the female than in the male). Subcosta (Sc) usually complete, ending in costa. Wing 5.5 to 7 mm. long. *L. pilosa*.  
Mesonotum almost bare, except for narrow patches of long hairs behind the humeral callosities and before the scutellum; scutellum with only a few lateral setæ and apical fringes of soft hairs, the disk mostly bare. Palpi at least as long as fronto-clypeus. Upper side of wing mostly covered with microtrichia; only the axillary cell (2d An) or that cell and the hind fourth to half of the anal cell (Cu+1st An) bare . . . . . 2.
2. Upper side of wing with only the axillary cell (2nd An) mostly devoid of microtrichia. Subcosta (Sc) usually

<sup>1</sup> Published with the aid of a grant from the Museum of Comparative Zoology at Harvard College.

- complete, ending in costa. Frons nearly twice the width of an eye . . . . . 3.
- Axillary cell (2d An) and hind fourth to half of anal cell (Cu+1st An) devoid of microtrichia . . . . . 4.
3. Frons very wide, at most as long as wide at postvertex. Frontal bristles fairly numerous, mostly in one rather irregular row. Palpi at most half as long as the height of the head. Wing 7 to 8 mm. long . . . . . *L. schoutedeni*.
- Frons longer than wide at postvertex. Frontal bristles very few, in one row. Palpi nearly as long as the height of the head. Wing 9 mm. long . . . . . *L. majuscula*.
4. Frontal bristles few, placed mostly in one, irregular row. Subcosta (Sc) usually incomplete, not ending in costa . . . . . 5.
- Frontal bristles numerous, in more than one row. Frons one and one-half times to twice the width of an eye; inner margins of eyes distinctly diverging to postvertex. Subcosta (Sc) usually complete, ending in costa . . . . . 7.
5. Inner margins of eyes strongly diverging to postvertex; frons wider than an eye in both sexes, slightly narrower in male than in female. Smooth postvertex short and transverse, the anterior margin longer than the sides, usually without median pit. Wing 7 to 8.5 mm. long.  
*L. americana*.
- \* Inner margins of eyes subparallel or slightly diverging. Smooth postvertex rather long and semi-elliptical, the anterior margin about as long as the sides, often with a median pit or rudimentary ocellus . . . . . 6.
6. Frons narrow, at most as wide as an eye (even in the female), usually narrower. Wing 6.5 to 8 mm. long.  
*L. wolcottii*.
- Frons wider than an eye in both sexes, usually much so. Wing 6.5 to 7 mm. long . . . . . *L. fusca*.
7. Postvertex long, semi-elliptical, the anterior angles broadly rounded, the anterior margin convexly curved and about as long as the sides. Wing 7.5 to 8.5 mm. long (New World and Hawaii) . . . . . *L. nigra*.
- Postvertex short, more transverse, the anterior angles more abruptly rounded off, the anterior margin much longer than the sides. Wing 8 to 8.5 mm. long (Africa). *L. dukei*.

*Lynchia pilosa* (Macquart)

*Olfersia pilosa* Macquart, 1843. See J. Bequaert, 1933, p. 70. Additional reference: *Olfersia pilosa* Speiser, 1907, in Sjöstedt, Wiss. Ergebn. Schwed. Zool. Exped. Kilimandjaro, II, pt. 10, pp. 4 and 7 (off *Choriotis kori*, Kibonoto, Tanganyika Territory).

*Male*. — Head seen in front about one and one-quarter times as wide as high; frons at its narrowest about twice as wide as the eye, measured along inner orbits about as long as its greatest width at vertex, the sides converging strongly from vertex to fronto-clypeus in upper half and more gradually in lower half; inner orbits (parafrontalia) very broad, at their widest more than half the width of mediovertex (frontalia), divided into a narrow, smooth and bare juxta-ocular zone and a much wider alutaceous inner zone bearing many soft, yellowish, reclining setæ in several irregular rows; one stiff, long black bristle at inner margin of parafrontalia near upper third and a few similar black bristles (one very long) near fronto-clypeus; one very long and thick, black vertical bristle; postvertex (vertical triangle) very short and wide, semi-elliptical with drawn-out sides, the anterior margin even, without median depression or pit, the occipital margin nearly straight; apex of fronto-clypeus with a narrow, deep median notch, the antero-lateral angles moderately produced. Palpi very short, thick, about as long as fronto-clypeus (measured from ptilinal suture to apical notch), covered with many long, black and yellowish setæ. Dorsal appendage of second antennal segment short, with obtuse apex, bearing apically many long, stiff, black bristles, mostly curved downward. Thorax: anterior margin broadly concave; pronotum exposed from above as a membranous sclerite, the hind margin of which overlaps the anterior margin of mesonotum; humeral callosities short, broadly rounded off at apex; median notal and transverse mesonotal sutures deep and nearly complete. Scutellum transversely rectangular (somewhat as in *Pseudolynchia*), slightly over three times as wide as its greatest length, the anterior (mesonotal) margin nearly straight, the hind margin slightly convex medially, somewhat angular at the sides, without median groove or depression. Thorax (including scutellum) covered uniformly with numerous, short, soft, appressed, yellowish hairs, directed backward and each arising from a small papula; the hairs are stiffer and black on the humeral callosities and notopleura; in addition there are long,

stiff, black bristles as follows: on each side, two on the humeral callosity, three or four at the hind corner of the notopleuron, one prealar, one postalar, one prescutellar, one scutellar (in the side corner), and six on the metepimeron; hind margin of scutellum densely fringed on the sides, weakly in the middle. Legs long and stout; femora much swollen, but without distinctive features; fourth tarsal segment of fore legs not produced, normal; hind tarsal segments broader than usual, densely covered beneath with stiff, black bristles. Wing short and broad; microtrichia covering the membrane except for the following areas: most of axillary cell (2d An), most of first basal cell (R), entire second basal cell (M), and basal half of the combined discal and second posterior cells ( $M_2$ ); first basal cell (R) long, narrow, parallel-sided; second basal cell (M) short, at most one-third of the length of the first, slightly widened apically and closed by a hyaline, unsclerotized, straight, vertical anterior basal cross-vein ( $M_3$ ), the upper outer angle being nearly square; subcosta (Sc) usually complete, ending in costa; apical portion of costa (beyond tip of first longitudinal vein) moderately swollen, distinctly thicker than basal portion; longitudinal veins all crowded near anterior margin; costa densely setulose, all other veins bare. Abdomen: one very large sclerotized basal tergite, with straight hind margin, covered with many evenly distributed short setæ; remainder of dorsum mostly soft and membranous, without sclerotized plates, uniformly covered with short setæ and some larger and heavier ones at extreme sides; one large preanal, sclerotized tergite, sparsely covered with short setæ and bearing on each side a group of ten to twelve very strong, spine-like bristles, three to five of which are much longer than the others and placed near the hind margin; venter entirely soft and membranous, fairly uniformly covered with short setæ, posteriorly with much longer ones; before the genital opening a pair of small prominent lobes, sclerotized at the broadly rounded tips, which bear many long setæ.

*Female*. — Differs from the male in the following particulars. Frons relatively narrower, at its narrowest about one and two-thirds the width of an eye. Membrane of wing bare over about the basal two-thirds: microtrichia covering only the apical two-thirds to three-fourths of the first posterior cell ( $R_5$ ), more extensively along third longitudinal vein ( $R_{4+5}$ ) than at fourth longitudinal vein ( $M_{1+2}$ ), the apical fifth to fourth of the com-



noted that Bustard and Sandgrouse, though not in the least related, are the only bird groups which have a pinkish under-down." I suggest that Sandgrouse and Francolins act as facultative, and perhaps temporary, hosts for specimens of *L. pilosa* that hatch at the season when Bustards are absent.

Bigot (1863, in Maillard, Notes sur l'Ile de la Réunion, 2d Ed., II, p. M38) includes *Olfersia pilosa* in his list of the Diptera of Reunion. If this record was based on a specimen taken in Reunion, it was certainly an erroneous identification.

#### *Lynchia schoutedeni*, new species

*Lynchia palustris* J. Bequaert, 1933, Psyche, XL, p. 71 (♂; off *Haliëtor africanus*, Mongende, Belgian Congo). Not of Lutz, Neiva and da Costa Lima, 1915.

*Male*. — Head seen in front about one and one-third times as wide as high; frons at its narrowest about twice as wide as the eye, measured along inner orbits distinctly shorter than its greatest width at vertex, the sides converging markedly from vertex to lower third and slightly diverging opposite fronto-clypeus; inner orbits (parafrontalia) broad, at their widest about half the width of mediovertex (frontalia), mostly smooth and shiny; frontal bristles moderately numerous, mostly placed in one irregular row; one very long and thick vertical bristle; postvertex (vertical triangle) rather long and wide, more than one-third of the length of mediovertex, transversely lozenge-shaped, the occipital margin nearly straight, the anterior margin straight and much longer than the sides, with a slight median triangular depression, but without pit; fronto-clypeus deeply notched medially at apex, the antero-lateral angles moderately produced. Palpi short, thick, slightly longer than fronto-clypeus (measured from ptilinal suture to apical notch), densely setulose and with one long bristle near the tip. Dorsal appendage of second antennal segment short and broad, its apical portion bearing many bristles, mostly curved downward. Thorax: anterior margin nearly straight; humeral callosities fairly long and prominent, with broadly rounded apex; median notal and transverse mesonotal sutures deep, the transverse suture broadly interrupted medially. Scutellum semi-elliptical, less than three times as wide as its greatest length, the anterior (mesonotal) margin slightly convex, the hind margin very strongly and evenly so, the disk with a fine longitudinal groove. Thorax mainly bare; a few soft, short and long hairs, directed back-

ward, in a transverse group on each side behind the humeral callosity, far from the middle line; two or three soft setæ on each side just before the scutellum; a few short setæ at apex of humeral callosity, followed by one very long bristle; notopleura with a few scattered short setæ and two long bristles posteriorly; on each side one prealar, one postalar and one scutellar bristle; metepimeron with a few short, stout setæ; scutellum with a fringe of long, soft hairs at hind margin and a few preapical hairs in a transverse row. Legs stout and rather short; femora much swollen, without distinctive features; fourth tarsal segment of fore legs not produced, normal; hind tarsal segments short and broad. Wing short and broad; microtrichia covering the membrane except for nearly the entire axillary cell (2d An); first basal cell (R) long, narrow, parallel-sided; second basal cell (M) long, more than one-third, but much less than one-half of the length of first, moderately widened apically and closed by a partially sclerotized, slightly curved, nearly vertical anterior basal cross-vein ( $M_3$ ), the upper outer angle being nearly square; subcosta (Sc) complete, ending in costa; apical portion of costa scarcely thicker than basal portion; longitudinal veins evenly distributed; costa densely setulose, all other veins bare. Abdomen: sclerotized basal tergite extending the entire width, bearing few short and soft setæ, the sclerite very short in the middle, produced into long and narrow side lobes; remainder of dorsum mostly soft and membranous, with many short, soft setæ, except for a median almost bare area bearing microscopic transverse striolæ; one small, median, transversely elliptical sclerotized plate a short distance behind the basal tergite and on each side a narrow partly sclerotized pleurite; preanal tergite forming one large, transverse, sclerotized plate, with straight anterior and hind margins and broadly rounded sides, sparsely covered with short setæ and laterally toward the apex with much longer bristles which are not at all spine-like (5 or 6 longer bristles on each side); venter mostly soft and membranous, fairly uniformly covered with short setæ; before the genital opening a pair of prominent lobes, sclerotized at the broadly rounded tips, which bear many setæ.

Total length, from notch of fronto-clypeus to apex of abdomen (alcoholic specimen): 8 mm.; length of wing: 7.8 mm.; width of wing: 2.7 mm.

*Female.* — Dorsum of abdomen mostly bare and microscopi-

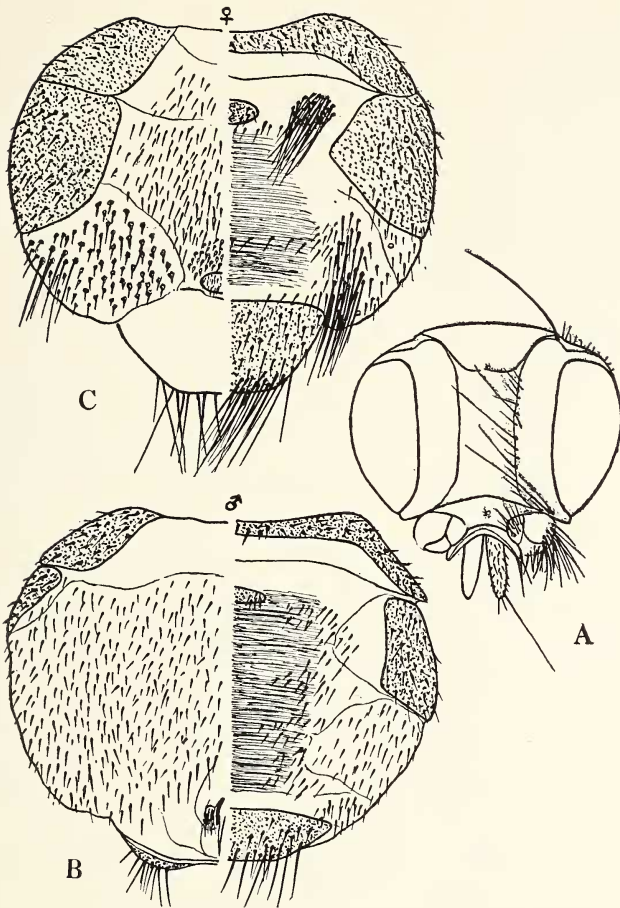


FIG. 1. *Lynchia schoutedeni* J. Bequaert, n. sp. A, head of male holotype; B, abdomen of male holotype from above (right) and below (left); C, abdomen of female paratype, Katwe, from above (right) and below (left).

cally striolate in the middle (as in male); but the sides, beyond the pleurite, with strong setæ which become very long and are more or less crowded into a brush posteriorly; in addition, a large brush-like patch of long and strong bristles on each side anteriorly near the small median, elliptical sclerotized plate. Preanal sclerotized plate semi-elliptical in outline, rounded-truncate behind, the long apical bristles stronger and more nu-



merous than in male (9 to 12 on each side); this preanal sclerite is flattened and completely bare on the ventral side, a striking peculiarity of the species. Apical portion of venter covered with very short setæ arising from unusually large, sclerotized papulæ. Otherwise as in male.

Total length, from notch of fronto-clypeus to apex of abdomen (alcoholic specimen): 8 mm.; length of wing: 7.8 mm.; width of wing: 2.7 mm.

Specimens Examined. — BELGIAN CONGO: Holotype, male, Mongende, off Cormorant, *Haliëtor africanus* (Gmelin) (H. Schouteden. — Congo Museum, Tervuren). — KENYA COLONY: Allotype, female, Naivasha, off *Phalacrocorax carbo lucidus* (Lichtenstein) (A. Meinertzhagen. — Museum Comp. Zoöl., Cambridge). — UGANDA: Male and female paratypes, Entebbe, off *Haliëtor africanus* and off *Anhinga rufa rufa* (Daudin) (G. H. E. Hopkins. — Brit. Mus.). Female and male paratypes, Kampala, off *Anhinga rufa rufa* (G. H. E. Hopkins. — Mus. Comp. Zoöl.). Female and male paratypes, Bulengugwe, off *Anhinga rufa rufa* (W. G. Eggelius and G. H. E. Hopkins. — Brit. Mus.; Mus. Comp. Zoöl.). Male and female paratypes, Katwe, Toro, off *Anhinga rufa rufa* and *Phalacrocorax carbo lugubris* Rüppell (G. H. E. Hopkins. — Mus. Comp. Zoöl.). Male and female paratypes, Kome Island, Lake Victoria (G. D. H. Carpenter. — Brit. Mus.). — ETHIOPIA: Female paratype, Dambi Ford, in tent, probably off a Cormorant (Major Cheesman. — Brit. Mus.). Several specimens are infested with myialgid mites, the infestation being particularly heavy on one of the flies from Katwe, off *Anhinga rufa*.

A study of a cotype of *Olfersia palustris* Ad. Lutz, Neiva and da Costa Lima (1915, Mem. Inst. Osw. Cruz, VII, p. 183, Pl. XXVIII, fig. 4), from the State of Piahy, Brazil, shows that I was mistaken in referring to that species the African parasite of Cormorants. The true *O. palustris* is one of the small species of *Lynchia*, the wing being about 5 mm. long. It is very closely related to, or possibly even identical with, *Lynchia albipennis* (Say).<sup>1</sup>

<sup>1</sup> I am indebted to the late Dr. Ad. Lutz for a cotype of *Olfersia palustris*, now deposited at the Museum of Comparative Zoölogy. I surmise that the length of the wing as given originally (7 mm.) was either an oversight or meant to cover the distance from the clypeus to the tips of the folded wings. It should be noted that the total length of the body as given (5 mm.) is too small for any of the large species of *Lynchia*.

For a long time I was undecided as to whether the African parasite were not *Lynchia massonnati* (Falcoz) (*Ornithoponus massonnati* Falcoz, 1926, Faune de France, XIV, Diptères Pupipares, p. 31, figs. 28–29), based upon the female fly off *Platalea leucorodia*, from the region of the Dombes, Dept. Ain, France, which Massonnat (1909, Ann. Univ. Lyon, N.S.,

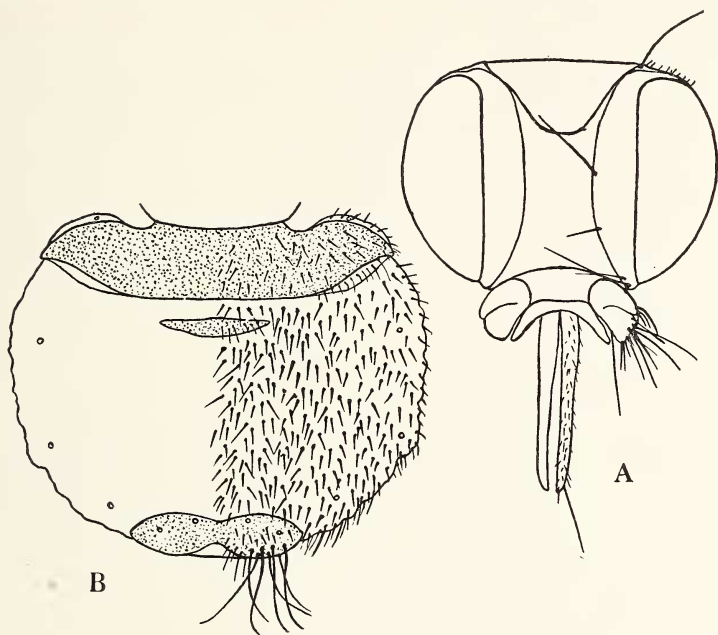


FIG. 2. *Lynchia majuscula* J. Bequaert, n. sp., male holotype. A, head; B, abdomen from above (right) and below (left).

CXXVIII, p. 304, Pl. V, figs. 40–42) had referred to *Lynchia americana*. While it seems fairly certain that Massonnat's fly was not the American *Lynchia americana* (Leach), it does not seem possible to regard it as identical with the African parasite of Cormorants. Neither Massonnat nor Falcoz mentions or figures the peculiar brush-like setæ on the sides of the abdomen. These are so characteristic of the female of *L. schoutedeni* that they could hardly have been overlooked. It is possible, however, that Massonnat's specimen was really a male, in which case it might well have been my new species.

*Lynchia majuscula*, new species

*Female*. — Head seen in front slightly wider than high; frons about twice as wide as eye, measured along inner orbits about one and one-third times as long as its width at vertex, with nearly parallel sides; inner orbits (parafrofrontalia) wide, slightly more than half the width of mediovertex (frontalia); frontal bristles reduced to a small group on the gena near lower edge of eye, and two or three on the middle; one very long vertical bristle; postvertex (vertical triangle) long, more or less triangular and broadly rounded anteriorly, nearly as long as wide and about half as long as mediovertex, apparently without median anterior depression or pit; occipital margin straight; fronto-clypeus of the usual shape, the antero-lateral angles moderately produced. Palpi unusually long and slender, only slightly shorter than the height of the head. Thorax: anterior margin straight medially; humeral callosities broad, moderately prominent, bluntly rounded at apex, with one long bristle and eight to ten short setæ; anterior half of mesonotum (mesoscutum) on each side anteriorly with a narrow, transverse patch of short, soft hairs and a few setæ, the patch not reaching the middle line; one very long prealar bristle; dorsal portion of mesopleura (notopleura) with a few scattered short setæ and, posteriorly, with one long bristle; a few setæ near outer hind margin of mesonotum and one long postalar bristle; hind margin of scutellum evenly and moderately convex, weakly fringed and in each corner with one long scutellar bristle; metepimeron with 5 or 6 strong, short bristles and some softer setæ. Legs without distinctive features; fourth tarsal segment of fore legs not produced. Wing long and broad; microtrichia covering most of the membrane; axillary cell (2d An) bare, except for a very narrow zone along the sixth longitudinal vein (2d An); first basal cell (R) long, narrow, parallel-sided; second basal cell (M) less than half but over one-third of the length of the first, closed by a nearly vertical anterior basal cross-vein ( $M_3$ ); subcosta (Sc) complete, ending in costa; costa densely setulose; third longitudinal vein ( $R_{4+5}$ ) with a few setulæ close to the tip; other veins bare. Abdomen: a broad, short, transversely lozenge-shaped basal tergite, followed by a small transverse median sclerite; preanal tergite consisting of two elliptical plates, broadly connected medially and each bearing a group of eight

long bristles and a few shorter ones; remainder of dorsum soft and fairly uniformly covered with many short setæ on small papulæ; in addition the integument of the median area is microscopically, transversely striolate; ventrally there is apparently only one small, crescent-shaped sclerite, placed immediately in front of the anal ring and more or less divided longitudinally; ventral surface uniformly covered with many setæ, slightly



FIG. 3. *Lynchia majuscula* J. Bequaert, n. sp. Wing of male holotype. Photograph by F. M. Carpenter.

longer than those of dorsum; soft portion of abdomen very superficially divided along the sides into five segments, each corresponding to one of the spiracles.

Total length, from notch of fronto-clypeus to apex of abdomen (somewhat flattened on the slide): 8 mm.; length of wing: 9 mm.; width of wing: 3 mm.

Specimen Examined. — CEYLON: Holotype, female, off a Falcon, *Spilornis cheela spilogaster* (Blyth), April, 1935 (sent by the late Dr. G. A. H. Bedford. — Mus. Comp. Zoöl.).

*L. majuscula* appears to be most closely related to *L. schoutedeni*, described in this paper, agreeing with it in the characters of the wing. It is, however, slightly larger, being the largest member of the genus I have seen thus far. In addition to the differential characters given in the key, attention may be called to the difference in the pilosity of the dorsum of the abdomen and in the shape of the postvertex.

The description is based on a single specimen mounted on a slide in Canada balsam, after treatment with potash. It is possible that the frontal bristles were actually more numerous on the fresh specimen.

*Lynchia americana* (Leach)

*Feronia americana* Leach, 1817; *Hippobosca bubonis* Packard, 1869. See J. Bequaert, 1933, p. 72.

The synonymy, distribution and hosts of this fly will be discussed fully in a forthcoming paper on the North American Hippoboscidae.

*L. americana* is one of the most common and widespread Nearctic hippoboscids. It is known in the Dominion of Canada from Ontario and Nova Scotia; and in the United States from Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, the District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana, Texas, Kentucky, Ohio, Indiana, Illinois, Wisconsin, Iowa, Nebraska, Minnesota, Kansas, Colorado and Nevada. Farther south it seems to be very rare, as I have seen only one specimen from Mexico (Grito) and one from Panama (Juan Diaz). The published records from California and the Galapagos were based on misidentifications.

The known host list is very large, but this species is most commonly found on diurnal and nocturnal birds of prey and on Ruffed Grouse. H. S. Peters (1935, Ann. Carnegie Mus., XXIV, p. 57) reported a specimen off an American Egret (*Casmerodius albus egretta* Gmelin), with a Mallophagan (*Esthiopterum botauri* Osborn) attached, a most unusual find. The only record I have from a passerine host is a specimen taken at White Plains, New York, off a White-throated Sparrow, *Zonotrichia albicollis* (Gmelin), by Mr. C. Farley. *L. americana* has become established on the introduced Ring-necked Pheasant, *Phasianus colchicus torquatus* Gmelin.

Since this paper was sent to press, I received from Dr. A. Stone several specimens of *L. americana* taken off Wild Turkey in North Carolina (Durham; Rockingham Co.) and Mississippi (Picayune).

The statement in my earlier paper (1933, p. 75) regarding the occurrence of pupæ in the ears of Great Horned Owl, should be deleted. In C. W. Johnson's paper it refers to *Ornithoica vicina* (Walker) (cited as *O. confluenta*).

*Lynchia fusca* (Macquart)

*Olfersia fusca* Macquart, 1845. See J. Bequaert, 1933, p. 77<sup>1</sup>; 1940, Rev. Acad. Colombiana Cienc. Ex. Fis. Nat., III, pt. 12, p. 416; 1943, JI. of Parasitology, XXIX, p. 132.

This species will be more fully discussed in a forthcoming paper.

*L. fusca* is fairly common in Oregon and California, but it is also found occasionally in the eastern United States (South Carolina, Georgia, Florida, Texas, Tennessee, Kansas, Colorado, and Michigan). It was originally described from Colombia, and has also been taken in Panama and Brazil.

It is mainly found on Owls, more rarely on diurnal birds of prey.

*Lynchia wolcotti* (Swenk)

*Olfersia wolcotti* Swenk, 1916, JI. New York Ent. Soc., XXIV, p. 132 (no sex. Michigan: Ann Arbor, off *Buteo platypterus*).

My surmise that *O. wolcotti* might be a synonym of *L. fusca* (J. Bequaert, 1933, p. 78) was incorrect. Through the courtesy of the late Prof. Myron H. Swenk, I was able to study the type now in the Department of Entomology, University of Nebraska.

Specimens Examined. — MICHIGAN: Ann Arbor, off *Buteo p. platypterus* (R. H. Wolcott. — Holotype). McMillan, off *Accipiter v. velox* (O. M. Bryens, June 6, 1933; recorded also by H. S. Peters, 1936, Bird-Banding, VII, p. 13). — NEBRASKA: Lincoln, off *Buteo p. platypterus* (C. E. Mickel). — PANAMA: El Volcan, Chiriqui, July 6, 1937, off a Hawk (C. B. Worth).

Apparently a rare species, which has been taken thus far only from diurnal birds of prey.

*Lynchia nigra* (Perty)

*Hippobosca nigra* Perty, 1833; *Ornithomyia intertropica* Walker, 1849; *Olfersia acarta* Speiser, 1902. See J. Bequaert, 1933, p. 79<sup>2</sup>; 1933, Proc. California Ac. Sci., (4) XXI, p. 134;

<sup>1</sup> The reference to Ad. Lutz, Neiva and da Costa Lima, 1915, Mem. Inst. Osw. Cruz, VII, p. 182, should be deleted. These authors undoubtedly referred to *L. fusca* some of the smaller *Lynchia* and their specimens seem to have been at least partly *L. angustifrons* (v. d. Wulp). The latter is a valid, distinct species, not a synonym of *L. fusca*. The flies off Owls, which Ad. Lutz, Neiva and da Costa Lima (*op. cit.*, p. 181) called *Olfersia nigra* Perty, were almost certainly *Lynchia fusca* (Macquart).

<sup>2</sup> The reference to Ad. Lutz, Neiva and Da Costa Lima (1915, Mem. Inst.

1940, Mem. Soc. Cubana Hist. Nat., XIV, p. 322; 1940, Rev. Acad. Colombiana Cienc. Ex. Fis. Nat., III, pt. 12, p. 416; 1941, Occ. Papers B. P. Bishop Mus., XVI, p. 281; 1942, Bol. Entom. Venezolana, I, p. 82.

This species will be fully discussed in the forthcoming revision of North American Hippoboscidae.

Additional Neotropical Specimens. — MEXICO: Nayarit, off "Chicken Hawk" (Amer. Mus. Nat. Hist.). Chichen Itza, Yucatan, off *Geranospiza nigra* (Du Bus), *Buteo magnirostris conspectus* (Peters) and *Asturina nitida plagiata* Schlegel (J. Van Tyne). San Carlos Bay, Sonora, off *Buteo borealis calurus* (G. Augustson). Los Frailes Bay, Lower California, off *Polyborus cheriway audubonii* Cassin (G. Augustson). Pedregal, Munic. Tancitaro, 6,000 ft., Michoacan, off *Buteo borealis* (H. Hoogstraal). La Puerta de Hambre, Munic. Apatzingan, 1,200 ft., Michoacan, off *Falco mexicanus* Schlegel (R. Traub). Apatzingan, Munic. Apatzingan, 1,200 ft., Michoacan, off young Hawk (R. Traub). — REPUBLIC OF HONDURAS: Subirana, Yoro (Stadelmann). — VENEZUELA: San Felipe, off *Herpetotheres c. cachinnans* Linné (P. Anduze). — BRITISH GUIANA: Upper Rupununi River (Ogilvie). — BRAZIL: Maracajú, Matto Grosso, off *Cathartes aura* (Linné) and "gavião" or fulvous-bellied Kite (R. M. Gilmore).

In North America *L. nigra* is known from British Columbia, Quebec, New York, Kansas, Colorado, Utah, Arizona, New Mexico, Montana and Texas. It has also been taken in the Galapagos, Hawaii, and Bolivia.

All the known hosts are diurnal birds of prey.

#### *Lynchia dukei* (Austen)

*Olfersia dukei* Austen, 1911. See J. Bequaert, 1933, p. 80. Since publishing this paper I have examined the type at the British Museum.

Additional Specimens. — BELGIAN CONGO: Butiaba, Lake Albert, off *Haliæetus vocifer* (Daudin) (A. Meinertzhagen). The specimen previously recorded from Ganda Sudi was off *Hieraaëtus ayresii* (Gurney). — CAMEROON: Metet, off a Hawk

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Osw. Cruz, VII, p. 181) should be deleted. The specimens which these authors referred to *L. nigra* were almost certainly *L. fusca* (Macquart), while their *Olfersia raptorum* was possibly *L. nigra*.

(A. I. Good). Lolodorf, off *Gypohierax angolensis* (Gmelin) (A. I. Good). Sangmelima (A. I. Good). — UGANDA: Kampala, off *Polyboroides typicus* (Smith) (G. H. E. Hopkins). Katwe, Toro, off *Haliæetus vocifer* (G. H. E. Hopkins). Entebbe, off *Haliæetus vocifer* (G. H. E. Hopkins). Kaswama, off *Haliæetus vocifer* (G. H. E. Hopkins). Mityama, off "eagle" (G. H. E. Hopkins). — KENYA COLONY: N'gong, off *Buteo rufosfuscus augur* (Rüppell) (G. van Someren). — TANGANYIKA TERRITORY: Dodoma, off *Aquila rapax* (Temminck) (A. Loveridge). Magrotto Plantation near Tanga, off *Gypohierax angolensis* (A. Loveridge).

*L. dukei* is strictly Ethiopian and known at present from Cameroon, French Congo, Belgian Congo, Abyssinia, Uganda, Kenya Colony and Tanganyika Territory. It is the African representative of the New World *L. nigra*, from which it is possibly not specifically distinct.

Like *L. nigra*, it is known only from diurnal birds of prey.

#### Unrecognized Species

Several of the described, larger species of *Lynchia* cannot be recognized with certainty from the inadequate descriptions. Some of them are evidently synonyms of the species recognized in this paper.

1. *Lynchia massonnati* (Falcoz, 1926). See J. Bequaert, 1933, p. 72, and the discussion of *L. schoutedeni* in the present paper.

2. *Lynchia villadæ* (Dugès, 1887). See J. Bequaert, 1933, p. 76. Possibly a synonym of *L. americana* (Leach).

3. *Lynchia macquartii* (Rondani, 1878). See J. Bequaert, 1933, p. 78. Possibly a synonym of *L. fusca* (Macquart).

4. *Lynchia raptatorum* (Ad. Lutz, Neiva and da Costa Lima, 1915). See J. Bequaert, 1933, p. 82. A synonym of either *L. nigra* (Perty) or *L. fusca* (Macquart). In view of the fact that *raptatorum* was said to occur in several Brazilian localities and on four species of diurnal birds of prey, I now consider that it was most probably *L. nigra*.

5. *Lynchia penelopes* Weijenbergh, 1881. This, the genotype of *Lynchia*, has unfortunately not been seen by any subsequent student. It is doubtful whether the type is still in existence. Specimens should be collected again from the type host,



*Penelope canicollis* Wagler, in northern Argentina. It is most probably a species distinct from any recognized in the present paper.

6. *Ornithomyia rufiventris* Bigot, 1885, Ann. Soc. Ent. France, (6), V, p. 243 (no sex; no host. Brazil: Porto Alegre). Speiser saw the type and recognized it as a *Lynchia*, a genus which he called *Olfersia* (1902, Zeitschr. Syst. Hym. Dipt., II, p. 169). It was evidently either *L. fusca* (Macquart) or *L. nigra* (Perty), most probably the latter.

7. *Lynchia pallidilabris* (Rondani). *Olfersia pallidilabris* Rondani, 1878, Ann. Mus. Civ. Genova, XII, p. 161 (no sex; no host; Mexico). The size (6 to 7 mm. long) places it among the larger species. One can only surmise that it was either *L. fusca* or *L. nigra*.